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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,621	01/22/2001	Hideya Takeo	Q61229	8760

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EXAMINER	
KIM, CHONG R	

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/765,621	TAKEO, HIDEYA	
	Examiner	Art Unit	
	Charles Kim	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7,11,12,17,21-31,33 and 35* is/are rejected.

7)☒ Claim(s) *3-6,8-10,13-16,18-20,32,34,36 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on October 4, 2005 has been entered and made of record.

2. In view of applicant's amendment, the claim objections are withdrawn.

3. In view of applicant's amendment and arguments, the 112 second paragraph rejections are withdrawn.

4. In view of applicant's argument (page 23) that Yazici does not transform an ***original*** image signal, the rejections of claims 1, 2, 11, 12, 21, 24, 27, 28 under 35 U.S.C. 102(e) as being anticipated by Yazici are withdrawn. Furthermore, in view of applicant's argument (page 25) that Hara does not apply an inverse-wavelet transform, the rejections of claims 1, 2, 3, 11-13, 22-23 under 35 U.S.C. 102(e) as being anticipated by Hara are withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ohta, U.S. Patent No. 5,173,788 ("Ohta"), the details of which are provided below.

5. Applicant's arguments with respect to the 112 first paragraph rejections have been fully considered, but they are not deemed to be persuasive for at least the following reasons.

Applicants argue (pages 18-19) in response to the 112 first paragraph rejections that the "Applicant's specification supports the recitation 'said transformed image signals which contains a spatial frequency component corresponding to a grid array frequency of each possible stationary grid that may be used'" on page 7, line 2 to page 8, line 3. However, the cited portions of the ***original*** specification indicate that the transformed image signals contain a spatial frequency component corresponding to a grid array frequency of a grid which is actually used ***or***

a grid which is to be used. Nowhere does it state that the transformed image signals contain a spatial frequency component corresponding to a grid array frequency of each possible stationary grid that may be used, as claimed.

Specification

6. The amendment filed October 4, 2005 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The newly added material on pages 2-3 of the amendments to the specification are not supported by the original disclosure.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 7 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to claim 7, the phrase "said transformed image signals which contains a spatial frequency component corresponding to a grid array frequency of each possible stationary grid that may be used" in lines 3-5 is not sufficiently described in the applicant's specification. The Examiner was unable to find an instance in the applicant's specification that provides support for transformed image signals which contain a spatial frequency component corresponding to a grid array frequency of each possible stationary grid that may be used. The closest instance to this feature appears to be on pages 7 and 11 (as pointed out by the applicants). However, these pages of the applicant's specification appear to indicate that the transforming step and the reducing step can be performed on each stationary grid to be used. Nowhere does it state that the transformed image signal contains a spatial frequency component corresponding to a grid array frequency of each possible stationary grid that may be used. A similar rejection is applicable to claim 17.
Note: It appears that the applicant intended the phrase to read that the transformed image signals contain a range or subset of the frequency components corresponding to a grid array frequency of each possible stationary grid that may be used, such as recited in claims 27 and 28.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 2, 11, 12, 21, 24, 27, 28, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohta, U.S. Patent No. 5,173,788 ("Ohta") and Yazici et al., U.S. Patent No. 6,333,990 ("Yazici").

Referring to claim 1, Ohta discloses a periodic-pattern suppression method of reducing a spatial frequency component which forms a periodic pattern (contained in an original image signal, the method comprising the steps of:

a. transforming the original image signal, represented in a real space domain, into a plurality of transformed image signals which can be handled in a frequency domain (col. 2, lines 44-58), and

b. reducing a transformed image signal of the transformed image signals which has a desired frequency range containing a spatial frequency component corresponding to at least a frequency of the periodic pattern (col. 2, lines 58-68), and then transforming the transformed image signals into an inverse-transformed signal in the real space domain (col. 3, lines 1-12).

Ohta does not explicitly disclose that the reducing is performing in only the vicinity of an array direction of the periodic pattern, and not reducing any of the transformed image signals in a different direction from the vicinity of the array direction of the periodic pattern. However, this feature was exceedingly well known in the art. For example, Yazici discloses a periodic-pattern suppression method that reduces a transformed image signal which has a desired frequency range containing a spatial frequency component corresponding to at least a frequency of the periodic pattern in only the vicinity of an array direction of the periodic pattern, not reducing any of the transformed image signals in a different direction from the vicinity of the array direction of the periodic pattern [col. 3, line 50-col. 4, line 2 and figures 7-8. Note that the reduced "grid line

spectral component" (380) is in the vicinity of an array direction of the periodic pattern, since the grid line spectral component constitutes the periodic pattern].

Ohta and Yazici are combinable because they are both concerned with suppressing a periodic-pattern in an image by applying frequency transformations. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the reducing step of Ohta so that the transformed image signal corresponding to the periodic pattern is reduced in only the vicinity of an array direction of the pattern, as taught by Yazici. The suggestion/motivation for doing so would have been to reduce the periodic pattern without reducing resolution and blurring the image, thereby enhancing the accuracy of the pattern suppression method (Ohta, col. 8, lines 56-59). Therefore, it would have been obvious to combine Ohta with Yazici to obtain the invention as specified in claim 1.

Referring to claim 2, Ohta discloses a periodic-pattern suppression method of reducing a spatial frequency component resulting from a periodic pattern, contained in an original image signal, the method comprising the steps of:

a. transforming the original image signal, represented in a real space domain, into a plurality of transformed image signals which can be handled in a frequency domain (col. 2, lines 44-58), and

b. reducing a transformed image signal of the transformed image signals which has a desired frequency range containing a spatial frequency component corresponding to at least a array frequency of the pattern (col. 2, lines 58-68), and then transforming the transformed image signals into an inverse-transformed signal in the real space domain (col. 3, lines 1-12).

Ohta does not explicitly disclose that the periodic pattern comprises a stationary grid contained in an original image signal photographed using the stationary grid and that the reducing is performing in only the vicinity of an grid array direction of the stationary grid. However, this feature was exceedingly well known in the art. For example, Yazici discloses a periodic-pattern that comprises a stationary grid contained in an original image signal photographed using the stationary grid and a reducing step that reduces a transformed image signal which has a desired frequency range containing a spatial frequency component corresponding to at least a grid array frequency of the stationary grid, which is actually used, in only the vicinity of an array direction of the stationary grid, not reducing any of the transformed image signals in a different direction from the vicinity of the array direction of the periodic pattern [col. 2, lines 58-67, col. 3, line 50-col. 4, line 2, and figures 7-8. Note that the reduced "grid line spectral component" (380) is in the vicinity of the grid array direction of the stationary grid, since the grid line spectral component constitutes the stationary grid].

Ohta and Yazici are combinable because they are both concerned with suppressing a periodic-pattern in an image by applying frequency transformations. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Ohta in view of Yazici. The suggestion/motivation for doing so would have been to reduce the periodic pattern without reducing resolution and blurring the image, while enabling a variety of different periodic patterns to be suppressed, thereby enhancing the flexibility and accuracy of the periodic pattern suppression method (Ohta, col. 8, lines 56-59). Therefore, it would have been obvious to combine Ohta with Yazici to obtain the invention as specified in claim 2.

Referring to claim 11, see the rejection of at least claim 1 above.

Referring to claim 12, see the rejection of at least claim 2 above.

Referring to claim 21, Ohta discloses a periodic-pattern suppression method of reducing a spatial frequency component resulting from a periodic pattern, contained in an original image signal, the method comprising the steps of:

a. transforming the original image signal, represented in a real space domain, into a plurality of transformed image signals which can be handled in a frequency domain (col. 2, lines 44-58), and

b. reducing a transformed image signal of the transformed image signals which has a desired frequency range containing a spatial frequency component corresponding to at least a frequency of the pattern having a low range end and a high range end (col. 2, lines 58-68 and col. 4, lines 20-64).

Ohta does not explicitly disclose that the periodic pattern comprises a stationary grid contained in an original image signal photographed using the stationary grid and that the reducing is performing in only the vicinity of an grid array direction of the stationary grid, wherein the frequency components greater than the high end range are not suppressed and lower than the low end range are not suppressed by filtering. However, this feature was exceedingly well known in the art. For example, Yazici discloses a periodic-pattern that comprises a stationary grid contained in an original image signal photographed using the stationary grid and a reducing step that reduces a transformed image signal which has a desired frequency range containing a spatial frequency component corresponding to at least a grid array frequency of the stationary grid having a low range end and a high range end in only the vicinity of an array

direction of the stationary grid, wherein frequency components greater than the high end range are not suppressed and lower than the low end range are not suppressed by filtering [col. 2, lines 58-67, col. 3, line 50-col. 4, line 2, and figures 7-8. Note that the reduced "grid line spectral component" (380) is in the vicinity of the grid array direction of the stationary grid, since the grid line spectral component constitutes the stationary grid].

Ohta and Yazici are combinable because they are both concerned with suppressing a periodic-pattern in an image by applying frequency transformations. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Ohta in view of Yazici. The suggestion/motivation for doing so would have been to reduce the periodic pattern without reducing resolution and blurring the image, while enabling a variety of different periodic patterns to be suppressed, thereby enhancing the flexibility and accuracy of the periodic pattern suppression method (Ohta, col. 8, lines 56-59). Therefore, it would have been obvious to combine Ohta with Yazici to obtain the invention as specified in claim 21.

Referring to claim 24, see the rejection of at least claim 21 above.

Referring to claim 27, Yazici further discloses that the reducing step reduces the transformed image signals of the transformed image signals which has a desired frequency range (390) containing a spatial frequency component corresponding to at least a grid array frequency (380) of each possible stationary grid that may be used in only the vicinity of a grid array direction of each stationary grid (figures 7-8. Note that the grid array frequency 380 is not a set value, but is the value of each possible stationary grid that may be used).

Referring to claim 28, see the rejection of at least claim 27 above.

Referring to claim 31, Ohta further discloses that the original image signal comprises a complete original photographed image (col. 3, lines 29-33).

9. Claims 22-23, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohta, U.S. Patent No. 5,173,788 ("Ohta"), Yazici et al., U.S. Patent No. 6,333,990 ("Yazici"), and Hara, U.S. Patent No. 6,173,086 ("Hara").

Referring to claim 22, Ohta and Yazici do not explicitly disclose that the stationary grid is a vertical grid and the transformed image signals comprise frequency components of a two-dimensional wavelet transformation, the transformed image signals being subjected to a one dimensional transformation in the vertical scanning direction. However, this feature was exceedingly well known in the art. For example, Hara discloses a stationary grid that is a vertical grid (col. 2, lines 58-63 and figure 2) and the transformed image signals comprise frequency components of a two-dimensional wavelet transformation, the transformed image signals being subjected to a one dimensional transformation in the vertical scanning direction (col. 5, lines 49-65).

Ohta, Yazici, and Hara are combinable because they are all concerned with suppressing a periodic-pattern in an image by applying frequency transformations. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Ohta and Yazici in view of Hara. The suggestion/motivation for doing so would have been to provide a high quality periodic pattern reduced image and enhance the flexibility of the periodic pattern suppression process (Hara, col. 3, lines 34-56). Therefore, it would have been obvious to combine Ohta and Yazici with Hara to obtain the invention as specified in claim 22.

Referring to claim 23, Ohta and Yazici do not explicitly disclose that the stationary grid is a horizontal grid and the transformed image signals comprise frequency components of a two-dimensional wavelet transform, the transformed image signals being subjected to one dimensional wavelet transformation in the horizontal scanning direction. However, this feature was exceedingly well known in the art. For example, Hara discloses a stationary grid that is a horizontal grid (col. 2, lines 58-63) and the transformed image signals comprise frequency components of a two-dimensional wavelet transform, the transformed image signals being subjected to one dimensional wavelet transformation in the horizontal scanning direction (col. 5, lines 49-65).

Ohta, Yazici, and Hara are combinable because they are all concerned with suppressing a periodic-pattern in an image by applying frequency transformations. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the method of Ohta and Yazici in view of Hara. The suggestion/motivation for doing so would have been to provide a high quality periodic pattern reduced image and enhance the flexibility of the periodic pattern suppression process (Hara, col. 3, lines 34-56). Therefore, it would have been obvious to combine Ohta and Yazici with Hara to obtain the invention as specified in claim 23.

Referring to claims 25-26, see the rejections of at least claims 22-23 above.

10. Claims 29-30, 33, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ohta, U.S. Patent No. 5,173,788 ("Ohta"), Yazici et al., U.S. Patent No. 6,333,990 ("Yazici"), and Barski et al., U.S. Patent No. 6,269,176 ("Barski").

Referring to claim 29, Ohta and Yazici do not explicitly disclose that the reducing step judges the grid array direction of the stationary grid, and applies the process of reducing a component less than a predetermined frequency, based on the result of the judgment. However, this feature was exceedingly well known in the art. For example, Barski discloses a method for reducing a grid structure in an image by reducing a component less than a predetermined frequency based on a judged grid array direction of a stationary grid (col. 5, lines 28-36 and col. 8, line 30-col. 9, line 10. Note that the kernel filters provide both high-pass and low-pass filtering, and therefore, reduce a component less than a predetermined frequency).

Ohta, Yazici, and Barski are combinable because they are all concerned with reducing a periodic pattern in an image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the reducing step of Ohta and Yazici, so that it is based on the judged grid array direction, as taught by Barski. The suggestion/motivation for doing so would have been to provide faster processing and the preservation of detail in the image (Barski, col. 2, lines 50-57). Therefore, it would have been obvious to combine Ohta and Yazici, with Barski to obtain the invention as specified in claim 29.

Referring to claim 30, see the rejection of at least claim 29 above.

Referring to claim 33, Ohta and Yazici do not explicitly disclose that the reducing step calculates powers of the plurality of transformed image signals, judges a grid length direction of the stationary grid, based on whether or not each calculated power is greater than a predetermined threshold value, and applies a process of reducing a component less than a predetermined frequency, based on the result of judgment. However, Barski discloses these features in column 5, lines 28-36 and column 6, line 59-column 7, line 41.

Ohta, Yazici, and Barski are combinable because they are all concerned with reducing a periodic pattern in an image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the reducing step of Ohta and Yazici, so that it is based on the judged grid array direction, as taught by Barski. The suggestion/motivation for doing so would have been to provide faster processing and the preservation of detail in the image (Barski, col. 2, lines 50-57). Therefore, it would have been obvious to combine Ohta and Yazici, with Barski to obtain the invention as specified in claim 33.

Referring to claim 35, see the rejection of at least claim 33 above.

Allowable Subject Matter

11. Claims 3-6, 8-10 13-16, 18-20, 32, 34, 36, 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
December 23, 2005

SAMIR AHMED
PRIMARY EXAMINER